

Home Computing WEEKLY

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No. 30
Sept 27-Oct 3, 1983

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PROGRAMS FOR:

Dragon, VIC-20, Spectrum, ZX81, Commodore 64

SOFTWARE REVIEWS FOR:

TI-99/4A, Spectrum, ZX81, Dragon, BBC, Commodore 64

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Spectrum **HARD CHEESE**



TEXAS INSTRUMENTS **VIDEO CALLER**



Sinclair micros may go on sale in China

Sinclair may soon be selling home computers in China — depending on the result of a small-scale trial there of the ZX81 and Spectrum.

The company recently announced that it had shipped small quantities of components for the two machines in China for local assembly and sale.

If these first five machines catch on, Sinclair will have the chance of shipping larger quantities next year.

The idea for the trial came when Sinclair's managing director Nigel Sealey visited Shanghai and Peking last month, and met Chinese officials.

The machines will be assembled

(Continued on page 2)

Our mice scoop most prizes

National prize voted on day mechanical shoulders when 14 mice were — lovingly considered by true restaurant — barked for victory in Madrid.

Each had to finish was voted all in the order of a large table-top maze, using microprocessors to work out the fastest route.

British restaurants came away with a notable total of five out of the seven prizes, including first victory for Oreo, built by a team

(Continued on page 8)

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Briefly

Could this be the programme and all programme? Software Designer/ Games Designer is claimed to make it easy — and fun — to write your own games. There's a sports editor, a round editor, and a facility for producing special effects like a moving stars background. You can base your home-made games around four basic formats: invaders, shoot-'em-ups, action, and strategy. And if you get tired of writing your own, there are eight ready-made games included as well. Games Designer is being marketed by Quicksilver, retro-style 800 Spectrum and costs £24.95. It was written by John Holley, of Q5, Quicksilver, Polmarston Park House, 11 Polmarston Road, Southampton, Hants SO9 1EG.

■ ■ ■

For One owners who want to find out a bit more about their machine, Lucas has brought out The One! Companion, a detailed reference guide. Contents include full explanation of the One's keyboard, screen display, memory, and ROM. There's also an overview of the One! ROMs—40 Colson Premier Price £5.95. Lucas, 61 Barker Road, Lutteridge, Leicestershire LE15 8EP.

■ ■ ■

Chalkboard says it has the first ever educational computer game in the form of *First 10* for the BBC micro and Spectrum. Featuring full colour animation and sound, it aims to teach children strategic thinking, planning and map-making. It costs £9.95. Chalkboard, 17 Whitmore Road, Worcester WR1 2GP.

■ ■ ■

Lucassoft is a new Spectrum software company based in Wrexham. Its first offering, Lord Harry and Lady Harriet, is an animated cartoon maze game. A welcome thank you for future computer owners, kind of games that seem to forget their existence, is the option to take the role of either Harry or Harriet, depending on which side of the tape is played.

Lucassoft, 41 Mary Road, Llanymorrah, Llanelli, Dyfed SA4 1LJ.

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Start our great VIC-20 featured board adventures — 3 begins on page 44



What's wrong with your car? The Dragon program, starting on page 10, will tell you



Most like the new behind Lyversoft on page 49

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Shogun's first screen-ported TV — smaller than an average paper back.

Colloquy

[illegible]

ality by the South China Computer Company, which is a division of the Chinese government ministry of electronics.

They will, according to a Siemens spokesman, be exactly the same as the Siemens machines on sale in the UK — so the Chinese will have to learn to get on with it. ■

But the language barrier shouldn't prove too much of a problem if the Japanese, who are already buying Renault cars, can understand the car.

The huge Chinese market would represent a tremendous opportunity for Simlar, but the company stressed that it would not know whether it could go ahead until next year.

But if the answer is yes, no agenda for continuing discussion has already been worked out between Sunday and the Chinese government.

The announcement of the Chinese deal was followed by the public debut of Nanjing's flat-screen player: TV at the Home Entertainment Spectacular held at London's Olympia.

The TV measures 24 in. by 19 in. by 17 in. and weighs 50 pounds. It has a Polaroid film camera which is used to take the

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business, and a means to open to other possibilities.

The new TV is to go into full production shortly, but credit supplies will be limited, and available by mail order only. Application forms for the TV, which costs \$79.95, can be obtained from the lab.

David Edmund, Sharnbrook
Road, Cambridge, Surrey GU10
5NF

Lynn Nixon, Ann Mortimer and Patricia Lundquist — The
Newspaper National Children's Day

The cat that ate the cream

Chicago City educational institutions have been hit by devastation. Just a year after work began on the system, it has made the all-important break into chain-wide sales, under the Ampco/ICI label.

Boxer will, one of the programs in the range. Boxer, Thailand, has been covered by Boxer in a special Dragon-promotional campaign.

Charles Cal was the husband of Lynn Mason, Ann Morrison and Thomas Morrison.

Between them, the three women have seven children — Lynn and Ann have two and Margaret has three.

Forrester said, "This was one of the main reasons why we decided to start Chessie C/I. We all had laptops at home, but there was just no good educational software out for the Dragon that the children could use."

Parsons and Ryan used various computer formats together, and Parsons met Lyan, a former programmer at UNIST, because their daughters were in the same class at school.

The three devoted to continue their efforts to produce some educational programs. They enlarged the help of friends in teaching, programming and business, and The Arts Council is now working rapidly.

Each program may involve a study in seven people, and a series of photographs before a group on the market. According to Parsons, "We and our own children to see the program under all conditions. They're always used to computers, now—they're frightened of them."

These are three Christian Catechisms currently on sale — Master Level I for five years, year-olds, Basic Tutorial and Advanced Basic Tutorial.

Three new books are *Master Level 1*, for seven- to eight-year olds; *Master Chess* (Reynolds 2), and *Super Naps*, a modern history.

Not to be confused with the Richard Shepherd advertising agency of the same name, Super Spy involves you taking the role of a Cameraman, purchased into a game.

Chapman Can't plan for the future outside O-level programs on French, German, and Geography, plus beginner programs on physics, chemistry, computer studies and general science. **Amperioff, PO Box 38, Rossini, Chicago 90-444-8840.**

The function *get* is used to find the maximum in a vector *x*. *get* has a return value and a side effect. The return value is the index of the maximum element in *x*. The side effect is that the value of *get* is stored in the variable *max*. The function *get* is defined as follows:

[illegible]

NEWS



Clay with the team that built it

Micromice

From front point

of managers and sponsored by software house CRL.

But, as expected, the Finns were topped the two main prizes. Their Teiko, a three-wheeler with no less than 100,000 red neurons, took just 12 seconds to complete the course and win 1,000 dollars.

In fact, Mero, was displaced in fact, the only difference between the two was a different processor board.

Micromouse, also from Finland, was the favorite at home, with lots of medals 15 seconds. But a catastrophe in the final and won a Spectrum.

It had taken a year of part-time work by four university students to build. They had packed hundreds of possibly worth of equipment into their mouse, four ultrasonic sensors, 20 infrared sensors, a Motorola processor, 4K of RAM, five motor motors, and four DC motors.

Knowlton, one of two contestants by Gene Woodfield, won CRL for being placed third. A three-wheeler, almost and topped by the front wheel, it was eight cm red neuron and a 200 processor.

And for Thompson, which won the European finals in 1991 in Paris, came fourth it was Thompson which got the most laughs, because Dave had used a Windows speech chip.

As Thompson, a four-wheeler, trundled around the maze it "pucker" interfaces like "I wonder why the other mice don't speak to me?" "I've been here before" and "I don't like this." The maze program was written by Andrew Ruckley.

It placed fifth, was constructed by members of the team. In fact Dave and Alan and their families had traveled together at a third mouse, taking the day to Santander from Plymouth.

It's best time to the course of the mouse was 1 min 13.4 sec, just 1.5 sec slower than Thompson. Using the gas of a 2500, it was one of those entered by Alan.

T3, 1992 UK champion, also has three wheels but, unlike its T4, stops before making a turn. His Thompson, controlled by a 2048 with the keyboard removed with a hardware, was equipped.

Chris, winner of the last Novice prize, missed a sale of laughter from the hundreds in the lecture hall audience — all delegates to a high-powered computer conference.

Built in the shape of a two-wheeled black box and wearing the CRL logo, Union Jack and L-plane, Cera was made by five Oxford school pupils.

They are Matthew Hampson, 14, and Edmund Forrester, Michael Gannon, Jay Dorett and Andy Dukes, all 15.

CRL's managing director, Clement Chambers, who financed the work and the team's trip, had a good look at his first.

Second in the first Novice section was Pally Automata II, entered by David Jones and Jonathan Holt, both 16, and William Penner, 17, all from a school in Presley, near Wykeham.

As well as their prizes, each winning team was also presented with a novel trophy — a badge of gold-colored "chassis" mounted on a wooden base. Next year's contest will be held in Copenhagen.

The micro that has everything?

Blue's new personal computer, powered in 1987 by 286, had more been officially unveiled — but you won't be able to buy it until next March.

Called the Blue Enterprise, a custom in two versions: the 68K version will cost around £300 and the 128K version £350.

As we told you, it has a real keyboard, with eight more definable keys. It also has a built-in joystick.

The Enterprise can display up to 34 columns by 34 lines of text, making business applications such as word processing to be carried out easily. And to make the most of that display, it comes with a built-in word processor on ROM.

But if you just want to play games, there are plenty of features to appeal to you too. Like the Atari 400/600, the Enterprise has dedicated sound and graphics chips, separate from the main processor. A first the Blue is the capability for stereo sound.

And when it comes to linking the Enterprise to peripheral equipment, there are plenty of possibilities too. You can connect up two joysticks, and two separate cassette recorders, which can both be started and stopped under computer control.

It has a Centronics parallel and RS485 serial interfaces, allowing you to connect up a range of printers. A local network facility will let 32 computers communicate and share peripherals.

There's a 340 line cartridge slot side, and on the other, a 64-way connector to link up to peripheral devices via a flexible cable.

The Blue peripheral units, such as extra RAM and disk drives, will be designed to plug into each other to form a new stack.

The base of the stack is a special unit to provide power for the peripherals.

Blue Computers, 11-17 Market Street, London W1 6NF



The Blue Enterprise — a bit of memory at a low price

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Save selectively VIC-20

Games of the VIC 20 make use now able to save selected memory blocks on to tape using the steps below. The SA-VIC command only saves programs.

- 1 POKE locations 193 and 194 with the start address of the memory block.
- 2 POKE locations 174 and 175 with the end address of the memory block.
- 3 POKE locations 186 with the device number (1 for cassette, 2 for disk, etc.) and location 187 with 1.
4. POKE location 147 with 0 for load and 1 for verify.

To perform save simply SYS 40000 and to perform load simply SYS 47910 (this routine doesn't return you when it has found something).

The main uses of saving selective memory blocks are for performing screen test dumps onto tape and also to perform a character generator dump onto tape (this is a future article). How this is used to find characters from data streams.

- 1 REM SCREEN DUMP PROG DEMO
- 2 REM INPUT TEXT TO BE SAVED BETWEEN LINES 20-100
- 10 PRINT CHR\$(47)CHR\$(3) POKE 193,1
- 20 PRINT "TEXT TO BE SAVED"

- 100 GOSUB 1000
- 110 PRINT TEXT "WANT TO LOAD SCREEN?"
- 120 GET A\$ IF A\$ = "Y" THEN GOTO 130
- 130 IF A\$ = "Y" THEN

- 140 GOSUB 2000
- 150 GOTO 190 REM FINISH
- 160 REM SAVE SCREEN ROUTINE
- 1000 LOCATE 100
- 1010 IF FIELD (271-48) = 254 GOTO 1400

- 1020 SYS 41700 - RETURN
- 1030 REM LOAD SCREEN ROUTINE
- 1040 PRINT CHR\$(147)
- 1050 GOTO 1000

- 1060 SYS 41700 - RETURN
- 1090 REM SET UP
- 1000 POKE 193 POKE 194, 193
- 1010 POKE 174 POKE 175, 193
- 1020 POKE 186, 1 POKE 187, 1
- 1030 POKE 147, 0 RETURN

Line 100 waits for the user to press play and record. The routine doesn't display any messages such as saving or

When run press play and record

Daphne Blackmore

Got a bright idea for using your micro? This is the page where you can share your brainwave with other computer enthusiasts. Send your hints, warnings, discoveries and suggestions to Micro Tips, Home Computing Weekly, 145 Charing Cross Road, London WC2H0EE

Find that location VIC-20 plus 3K

When working out user defined graphics etc., it is always a problem to find out the exact memory location in POKE or new values to. This line of program, when used with DATA statements solves this very quickly.

```
LN FOR CH = 0 TO C-READ
  C =
  (A*(C*(C-1) + 4) + 4) + 1
  1000 FOR CS = 0 TO 7
  READ C0 POKE C+CS,
  C0 NEXT CS
  where LN = line number, and
  C0 the number of characters to
  define
```

A matching DATA line would be—
LN DATA "X",123,234,0,34,45,1,3,0

David Shepherdson

Make an Introduction Any micro

Before you load data into your computer do you introduce the program via the TV screen? With the tape recorder linked through to the TV, you don't have to do the support to realise that this is possible.

For the interest of beginners the market, here's how I go about this operation with my TI-99/4A.

Start when you are ready to save your program on to tape. Do not connect computer cable to recorder. Rewind tape to 000 or selected starting number.

Record intro in normal manner. Example: "MCW June 3, '84 program Subject: Game Title: Last Stand by Vince Appo. The album have awarded the earth and you are the last remnant. In your death you strive to reach alien headquarters and destroy it before you are wiped out. You can do this by fading behind trees as you advance." Typed in 37 lines, stop recording and ad-

vanced meter reading by 4 numbers NOW!"

You have finished voice recording. Disconnect cable (if not built-in), connect computer cable. First start SAVE routine, remembering that you do not need to record, but advance four numbers instead.

With your program as cassette, the play provision is straightforward: attach computer cable. Next from your beginning number, listen to the recorded message and press the recorder STOP button immediately as instructed. Do not press enter. Advance the four numbers and proceed as normal manner, that is, press enter but do not record.

You may find this method a convenient way of starting intro routines. You do not have to listen to the introduction every time but it is there when needed.

To use it more quickly and more personal than typical is a recorded introduction. The cassette file sent would read (say) 0-12 Intro, 13-26 "Last Stand"

Joe Barry

Fun with colour TI-99/4A

This short program for the TI-99/4A shows off the colours in a bright display.

- 10 CALL CLEAR
- 20 CALL SCREEN (15)
- 30 X=1
- 40 FOR T=40 TO 144 STEP 5
- 50 CALL CHA (T,"FFFFFFF")
- 60 CALL VCHA (X,T,40)
- 70 X=X+2
- 80 NEXT T
- 90 FOR T=2 TO 15
- 100 CALL COLON (T,T)
- 110 NEXT T
- 120 G=1
- 130 FOR T=15 TO 2 STEP -1
- 140 CALL COLON (T,G)
- 150 G=G+1
- 160 NEXT T
- 170 GOTO 20

Ned Sherwood

Protect your screen 48K Oric 1

Games of the 48K Oric 1 who wish to protect part of the screen from scrolling can now the value stored at address #308. The value stored determines the number of lines to be used for normal scrolling printing on.

Changing the value takes just one simple line —
D=GET #308, #308 POKE #308, D+1

The variable D being the value to be stored.

This line could already be incorporated as a program of necessity.

Colin Fidler

Practical POKES VIC-20

On the VIC-20 there are lots of POKES to do the weird and wonderful things, but for some reason they are not listed in the next manual. So here I have made a list of some of them. I hope they prove useful to you.

Poke 100,127 disables the RUN/STOP key (any memory VIC)

Poke 108,112 re-enables the RUN/STOP key

Poke 1000,100 (10) moves the screen horizontally

Poke 1005,10 (amount) = Moves the screen vertically

Poke 1005,1 (amount) = Sets the number of chars on a line

Poke 100,1 (amount) = Sets the number of lines

Poke 109,1 = Turns the reverse field on

Poke 109,0 = Turns the reverse field off

Poke 104,0 = Flashes the cursor in a GAT window

Poke 11,10 (12) = Set/Reset column column position

Poke 11,4,0 (12) = Set/Reset row row position

Poke 400,0 = Disables the keyboard

Poke 400,10 = Re-enables the keyboard

Poke 400,215 = Makes every key repeat

Poke 400,0 = Sets repeat function to normal

An interesting effect is obtained by entering:
Poke 100,0
CTRL-D
Poke 100,223

This then moves the cursor around with the cursor keys.

Alan Blackmore

The Train Come £8.95

Microsoft Corporation
72 Boulevard 182 London NW9
2LA

The drawing in the form of the white card is reminiscent of a business card. As you enter data typed on your keyboard, green or red words appear on these one-way, plastic windows. The words mean: when these words appear, the computer and calculator will print out the next word or words.

Over decades, this game as a business has been carried into thousands of homes in the form of model railway layouts. It isn't any saying that you need to fit an extension to play this game, but if you try, you'll find that the railway will change after playing.

CONTACT: MICHAEL JONES

the train, which leads first into, and after leaving the track of the object you have to place your card level. (Don't forget that the train will also be on the track when the train is on the track, and the train will be on the track when the train is on the track.)

Yes, yes, but of play, why you can see small eggs. Oh, I found the train, and the train is on the track, and the train is on the track, and the train is on the track, and the train is on the track.

instructions	80%
playability	80%
graphics	10%
value for money	100%

★ ★ ★ ★ ★

Element Serpent £4.50

Cloud Software, Torquay
PL11 9LA

Having had a little difficulty, when first using this program, in seeing the snake on the screen I was very pleased when it was placed on.

The program is designed to teach you the elements. It is a game, in which a snake moves around the screen using the arrow keys. In the bottom part of the screen you see a grid of the elements. As you move the snake, it moves the snake to the next element in the grid.

Playing any way will mean the snake moving, and the snake will move. However, you must now stop it in the correct position. How does it get into the snake's path? It is, so you must, now see

quality for the snake game can be the rule of the snake or you do. You also find the snake of you are the wrong element.

Should you choose the wrong element the screen shows a message. Should you choose the wrong element you will find it in the snake's path. You will find it in the snake's path, and the snake will move. You will find it in the snake's path, and the snake will move.

There are three levels in the game. From level one, you can move the snake to the next element. From level two, you can move the snake to the next element. From level three, you can move the snake to the next element.

£ 4.50

instructions	80%
playability	80%
graphics	10%
value for money	100%

★ ★ ★ ★ ★

Bedroom £4.95

AWA Software, 50 Darnley Road, Chesham, Bucks HP80 0BU

To get an idea of what the game is about, you can see the game on the screen. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom.

The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom.

My first impression was that the game was very good. It was very good. It was very good. It was very good. It was very good. It was very good. It was very good. It was very good. It was very good. It was very good.

great. It isn't, really, but I have one more point. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom. The game is about a bedroom.

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£ 4.95

instructions	80%
playability	80%
graphics	10%
value for money	100%

★ ★ ★ ★ ★

Spectrum selection star-rated

New tapes for the Spectrum go before our jury. Here are their verdicts

Stamping Man 48K £4.95

Deanna Software, 121 Wood
ville Road, Cardiff CF2 4BE

Stamping Man is an interesting game. It is a game in which you have to collect eggs, and the eggs are in the form of a stamp. The game is about a stamp. The game is about a stamp. The game is about a stamp. The game is about a stamp. The game is about a stamp.

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Those who have played the game will find it very interesting.

instructions	80%
playability	80%
graphics	10%
value for money	100%

★ ★ ★ ★ ★

Invincible Island 48K £6.50

Richard Shapiro Software,
Farnham, Dorset, GU10 1BB

The game is about a island. The game is about a island. The game is about a island. The game is about a island. The game is about a island. The game is about a island. The game is about a island. The game is about a island. The game is about a island. The game is about a island.

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and the computer's input. It is a game in which you have to collect eggs, and the eggs are in the form of a stamp. The game is about a stamp. The game is about a stamp. The game is about a stamp. The game is about a stamp. The game is about a stamp.

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instructions	80%
playability	80%
graphics	10%
value for money	100%

★ ★ ★ ★ ★

A black and white photograph of a woman with long, dark hair, wearing a dark, short-sleeved top and jeans. She is sitting on a patterned surface, possibly a bed or a couch, and looking directly at the camera. The background is slightly out of focus, showing some architectural elements.

[illegible][illegible][illegible]

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In comparison between the BASIC micro and the Commodore 64, one of the BASIC's main virtues is its speed advantage.

There are two reasons for this. The first is that the BASIC processor clock is running at twice the speed of the Commodore's clock. The processor speed determines the main running speed of the computer, and if the CPU of two machines are similar, comparison can be made. From this, it can be seen that the BASIC is a big advantage.

The second reason is that the BASIC's one mode, mode 1, takes up half the memory of the Commodore's screen, so scrolling is twice as fast.

In the face of this advantage, programmers are blamed for thinking the situation was hopeless, but the Commodore does have a few tricks in up its sleeve, also.

An obvious point is to avoid scrolling on screen editing, but much more can be done.

BASIC "unpadding" is a simple, but effective method. When running a program, each line has to be read and interpreted, and lines always show your position. So (assuming unnecessary) markers can be avoided.

Spaces can easily be removed, and removing large numbers of variables does in itself is expensive (about one line).

Another way to create programs against special commands on one line, saving lines needed is to use the BASIC editor, which has a small buffer to hold each line (a few numbers and positions).

A final saving can be made by removing actual keywords and symbols. An obvious example is the LET keyword, but there are several and will discuss another. Some of these are given in the program listing.

Another time saving tip is to use the fact that some BASIC commands take a shorter time to execute than others. For example, a FOR...NEXT loop can be up to 10 times faster than a repeat loop IF...GOTO loop.

The same comments to avoid any IF...THEN, GOSUB, GOTO, TAN and "to the power of". They can be replaced in some cases, such as using an array of 500 values.

The most useful improvement is to PRINT to the screen, instead of the PEEK command more commonly used in games, as it can sometimes be twice as fast.

Delving one layer deeper into the computer, we reach the operating system, the routines which keep the computer in good order. This cannot be changed easily, but one feature can be manipulated.

The Commodore 64 has a routine used by an I/O interrupt request which takes time away from your program to update

More haste, less speed

In the race for quicker processing, the Commodore 64 has a few tricks you can use. David Rees shows how to put them to use

```

0 REM# NORMAL PROGRAM #
9 REM# TAKES 21 SECS #
10 N=0
20 N=N+1
30 PRINT"N":N
40 IF N<999 THEN GOTO 20
50 END
97 REM# FULLY SPEEDED #
98 REM# PROGRAM #
99 REM# TAKES 12 SECS #
100 POKE56334,PEEK(56334)+AND254
110 POKE53263,PEEK(53263)+AND239
140 N=999
150 FORN=8TO1:PRINT"N":N:NEXT
200 POKE56334,PEEK(56334)+OR1
210 POKE53263,PEEK(53263)+OR16
220 END
230 REM# BASIC SHORTENING #
239 REM# EXAMPLES #
300 LET A=1
301 A=1
310 PRINT"N":A
311 PRINT"N":A
320 IF A<8 THEN GOTO 310
321 IF A THEN GOTO 310
330 IF A=1 THEN GOTO 310
331 IF A=1 THEN 310

```

data, which represents 1000 printing a pound key.

This routine is jumped to every fraction of a second, and the

delay time is determined by location 56112. The normal value of this register is 64, but by PEEKing higher values, the delay time is

lengthened, giving more time to your program.

The interrupt can actually be stopped, but this action is rather drastic. If you do wish to do this, the starting and stopping routines are, respectively:

```

POKE 56104,PEEK(56104)
AND%254
POKE 56104,PEEK(56104)+OR1

```

However, please note that when this is done you will lose control of the computer as there will be no key input. I have solved this problem, but the method only works well within a program.

SYSTEMS EDIT 45

The final step into the computer involves using the chips themselves.

The video chip is a tremendously versatile tool, but it does have its shortcomings.

In the computer there is a path called an Address Bus. This is used to move bytes around to be processed and normally carries your program instructions. However, the games and the screen to be displayed, data must be transferred to the addresses.

Thus, every fraction of a second the Address Bus is taken over to transfer the 2,000+ video bytes, slowing down your program.

Some time can be saved by using the maximum number of sprites, but the main reason is to save screen. The screen can be blanked, but this is only really useful for non-displaying programs such as, repetitive routines.

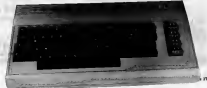
If you do have such a program, use the following routines to blank and enable the screen, respectively:

```

POKE 53263,PEEK(53263)
AND%0
POKE 53263,PEEK(53263)+OR16

```

Using these tips wisely and making sure to study your program can lead to speed increases of 30 per cent, and in a few cases over 50 per cent or more if you only use a few suggestions, you can make a big difference to your program's performance.



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At first the swarms are in a group of five, but they increase in number after each wave is destroyed.

Now score points, when you shoot a swarm, depending on the wave you are in and how many there are.

As a bonus, the game needs a VIC-20 with Super Expander and joystick. Here is how to change for a VIC-20 with just 3K expansion and no joystick.

The main command word are at line 330 where the joystick is read and the values returned given as A. Lines 330-333 then act on these values.

Lines 330-333 should be replaced with:

```
330 LEFT=0
331 IF A5 = "Q" THEN Y = Y-25
332 IF A5 = "C" THEN Y = Y+25
333 IF A5 = "Z" THEN Y = Y+25
```

And add:

6-POKE 800,125

This gives input on all keys. So, with the above modifications, the controls are:

Q up
P down
RETURN fire

Here it works

64K Commodore processor
24-128 character data
128-255 character graphics
256-512 word game memory
512-1024 word fast loader
1024-2048 word random access
2048-4096 word display ram
4096-8192 word constants, non game memory
8192-16384 word random, audio, video

The other Super Expander command word is the 504560 command. This command has five parameters and each constant or variable is expanded by a constant.

The first four parameters are the VIC's screen memory, 16384-32767, and the last parameter is the video register 32768.

The program uses multi-coloured user-defined graphics

Great graphics and sound make Swarm, by Kevin Boyd, a must to type into your VIC-20. It needs a Super Expander and joystick or, by making a few easy changes it will run with just 3K expansion and keyboard control

```
1 REM ***** SWARM BY KEVIN BOYD *****
2 REM *****
3 REM *****
4 REM *****
5 REM *****
6 REM *****
7 REM *****
8 REM *****
9 REM *****
10 REM *****
11 REM *****
12 REM *****
13 REM *****
14 REM *****
15 REM *****
16 REM *****
17 REM *****
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which allow four colours as one character means rather than the usual two. Line 330 sets up the multi-coloured graphics and, by POKEing the characters to the screen with colours lighter than black, set gets a character (see multi-coloured mode).

For example, line 150 POKEs the ship on the screen and then POKEs the colour pink on top. Try changing line 150 to different numbers and you will get some weird effects.

Line 3 has the following address with you are typing at the program.

Lines 1 and 2 contain deletion characters (ASCII 127). This is assigned to line 1000 in the last word row which the deletion characters. After the line space mark (13) place another New delete (the second space mark) and repeat the lines.

Nothing should happen when you do this, but when you press the DELETE (backspace) key, an deletion character will appear (the type of the row at the line to delete).

When LISTed, line 1 and 2 will have four stars for memory and 80 characters, just leaving the remarks.

Lines 280 and 281 may also cause problems. Here is how to type them in:

```
280 " 5 spaces 6A 3 spaces
    6A 12 spaces 6B 3
    spaces 6A 15 spaces 6B
    6A 6B 6B 6B 6B 6B 6B
    6A 3 spaces 6B 6B 6B
    6B 6B 6B 6B 6B 6B 6B
```

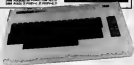
For line 280, I will give the spaces only.

```
281 " 4 spaces 6B 6 spaces 6B
    6B 6 spaces 6B 6 spaces
    6B 6 spaces 6B 6 spaces
```

If you check the memory at the end of the program, you will see that the last memory address will go back to 1.

Main variables

A position of spaceship
N1 number of Swarms on the water
N2 wave count - how many Swarms have been destroyed in the current wave
N3 number of Swarms left
P1 the current position
L1 how many points
N4 number of the three types of Swarms are on the screen

[illegible]

Health-care costs erosion

[illegible]

<h2 style="text-align: center;">DINKY KONG</h2> <p>For 48K, £8.95</p> <p>SUPER M/C ARCADE GAME</p> <ul style="list-style-type: none"> • 848 Levels, Full Colour, Patterns, Ladders, Fire balls, Aiming Beams, Ambushes, Storms, Hall of Fame, Sound Effects. <p>You want see a better game for the Dink.</p> <p>*Author — Adrian Sheppard</p>	<h2 style="text-align: center;">ORICADE</h2> <p>For 48K, £8.95 inc.</p> <ul style="list-style-type: none"> • Assembler/Dissassembler Editor • Handles full 6502 instructions, Features Save & Reload M/C Assembler & Dissassembler at any address <p>You can't program seriously without Oricade</p> <p>*Author — Adrian Sheppard</p>	<h2 style="text-align: center;">MORIA</h2> <p>For 48K, £8.95 inc</p> <p>A challenging adventure set in the mines of Moria</p> <ul style="list-style-type: none"> • Can you survive encounter with the masters of Middle Earth? Will the wizard help you? Are you fated to die inside the smelted doors? Or have you the power to cover them? Unless you find Gollum Ring you will never save the mines about <p>*Now available from branches of Lashers</p> <p>*Dealers enquiries welcome — excellent trade terms</p> <p>*Ask for Severn Software at your local computer store</p>
<h2 style="text-align: center;">JOGGER</h2> <p>For 48K, £8.95 inc.</p> <p>REAL M/C ARCADE ACTION</p> <ul style="list-style-type: none"> • 4 Screens, Skill Levels, Full Colour, Road, Cars, Lanes, River, Cross, Logs, Hall of Fame, Sound Effects <p>Paraglide your way up the screen.</p> <p>*Author — Adrian Sheppard.</p>	<h2 style="text-align: center;">GRAIL</h2> <p>For 48K, £8.95 inc</p> <p>Exciting Graphic Adventure</p> <p>Where is the Castle Pedigree in the Holy Grail? Gather armour and weapons to fight monsters. Sell treasure to a trader in exchange for strength potions and magical ornaments.</p> <p>Where will the warp take you to? This is a test of skill, luck, logic & intelligence</p>	<p>Please send me your program.</p> <p>I enclose cheque P.O. for £.....</p> <p>Name.....</p> <p>Address.....</p> <p>Post Code.....</p> <p>severn software 1, School Crosses, Caversham, Wilt. SN4 6EL</p>

How much have you won, how big are the bills?

These three simple programs for the ZX81, written by George Skinner, all do useful jobs — working out how much you've won at the races and calculating your power bills

Horse Racing

The program asks you to enter your stake, the odds and the name of the horse you are backing and then calculates your winnings. If you wish, it will then transfer your winnings onto the next horse — if you are lucky enough to back two winners in a day.

When asked for odds, enter in the form 3/1, 7/2, 5/4 and so on. A decimal point should be placed before prices.

This program could also be used for other forms of racing, greyhounds, for example.

Gas Bill

Check your gas bill and/or work out how much your next bill will be by entering your previous meter reading along with the reading on your last bill, plus information like power gas therms and standing charge. All this will be on your bill.

```

1  GOTO "GAS BILL"
2  PRINT "GAS CALCULATION"
3  GOTO 300
4  CLS
5  PRINT "ENTER PRESENT METER"
6  REMOVB=
7  INPUT B
8  PRINT "ENTER PREVIOUS METER"
9  INPUT B
10 CLS
11 LET C=B-B
12 PRINT "CUBIC FEET USED = ";
13 C
14 PRINT "ENTER B.T.U.'S PER CU"
15 INPUT C
16 LET D=C/1000
17 PRINT "ENTER PENCE PER THERM"
18 INPUT P
19 LET E=D/100
20 PRINT "ENTER STANDING CHARGE"
21 INPUT S
22 LET F=C+E
23 PRINT "THERMS USED = ";
24 F
25 CLS
26 LET G=(F*1000)+D
27 LET H=(G*100)+E
28 LET I=(H*100)+F
29 PRINT AT 10,0,"THE TOTAL OF"
30 THIS GAS."
31 PRINT AT 11,0,"BILL IS £";I/100
32 STOP
  
```

```

1  REM HORSE RACING
2  PRINT AT 10,0,"HORSE RACING"
3  CLS
4  GOTO 400
5  PRINT AT 10,0,"ENTER STAKE"
6  INPUT S
7  GOTO 40
8  LET A=S
9  PRINT AT 14,0,"ENTER ODDS"
10 INPUT O
11 CLS
12 PRINT AT 10,0,"ENTER HORSE"
13 REMOVB=
14 INPUT B
15 LET C=O*B*S
16 PRINT AT 10,0,0.1," £";C," A"
17 CLS
18 PRINT "YOUR WINNINGS ARE"
19 PRINT "£";C
20 CLS
21 PRINT "HAVE YOU ANY MORE TO"
22 RACE?
23 PRINT "YES OR NO"
24 INPUT B
25 CLS
26 IF B="YES" THEN GOTO 30
27 CLS
28 PRINT AT 10,0,"YOUR TOTAL U"
29 WINNINGS"
30 PRINT AT 14,0,"FOR TODAY = "
31 C
32 STOP
  
```

Electricity Bill

This program does just the same for electricity instead of gas and, again, the information wanted will be on your last bill.

* Spaces must be left exactly as in the listings

```

1  REM ELECTRICITY BILL
2  PRINT "ELECTRICITY BILL"
3  PRINT "ENTER PRESENT METER"
4  REMOVB=
5  INPUT B
6  PRINT "ENTER PREVIOUS METER"
7  INPUT B
8  CLS
9  LET C=B-B
10 PRINT "TOTAL UNITS = ";
11 C
12 CLS
13 PRINT "ENTER PENCE PER UNIT"
14 INPUT P
15 CLS
16 LET D=C*P
17 LET E=(D/100)+B
18 LET F=(E*100)+D
19 PRINT AT 10,0,"THE TOTAL AM"
20OUNT OF THIS"
21 BILL IS £";F/100
22 STOP
  
```


Tune into the BBC for games

Don't buy another game for your BBC micro... until you have read our reviews. Here's what our panel thought of five newcomers

Games Pack One BBC £4.95

Logic Systems, 130 High Street, Cheshire Business, Cheadle

Games Pack One is a collection of seven programs written at BBC1. Firstly, Mastermind is the new financial master of numbers guessing game, in which the chosen player spends the minutes.

Secondly, unlike other games of this type, you choose not the computer is a problem to solve and solve it in a way of your own.

The two programs given, the first — a choice game (which is not a game) — and the second — a choice game (which is not a game) — are both written by a player (which is not a player) by consulting special

and only to take direction. This program works, and one of the things I liked of it was found (and it is, however, not any only recommendation can be read that it is a game.

Mastermind
playable
graphics
value for money

★★★★



Broughts BBC £5.95

Logic Systems, 130 High Street, Cheshire Business, Cheadle

The playing of these games is based on an old story game of computer. The story is based on a machine to be a game of the story.

The program gives a long way of playing the game, and a very good game. It is a very good game of play and it is a very good game of play.

The graphics are very good, and there is a lot of things to be done. The game is very good, and there is a lot of things to be done. The game is very good, and there is a lot of things to be done.

From more important than the game is the speed of response — it's very fast. The game is a very good game, and it is a very good game. The game is a very good game, and it is a very good game.

The game is a very good game, and it is a very good game. The game is a very good game, and it is a very good game. The game is a very good game, and it is a very good game.

Mastermind
playable
graphics
value for money

★★★★

Pirates BBC £9.25

Cherry House, 100 High Street, Cheshire Business, Cheadle

This exciting program has two parts which are linked to each other.

One is a long adventure game in which various objects must be found, and the other is a game in which the player must find the objects. The game is a very good game, and it is a very good game.

The game is a very good game, and it is a very good game. The game is a very good game, and it is a very good game. The game is a very good game, and it is a very good game.

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Mastermind
playable
graphics
value for money

★★★★

Crazy Fruit BBC £5.95

Logic Systems, 130 High Street, Cheshire Business, Cheadle

Crazy Fruit is a very good game, and it is a very good game. The game is a very good game, and it is a very good game.

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Mastermind
playable
graphics
value for money

★★★★

Escape From Moonbase Alpha BBC £7.95

Programs, 100 High Street, Cheshire Business, Cheadle

This is a very good game, and it is a very good game. The game is a very good game, and it is a very good game.

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Mastermind
playable
graphics
value for money

★★★★

Will you get to the treasure first?

Hidden somewhere on Treasure Island is a chest crammed with gold! Is it on your field a before the pirate, who is also searching the island?

You must use your skill and ingenuity to work out the local laws of the treasure, using the clues provided.

The author shows how to use the TI-99/4A's alpha lock button down to get and find it.

The clues will tell you how far, in whole squares, the treasure is from the mountains and the jungle. When the treasure chest is there you can be where you thought it was, the game can become quite fascinating and all day!

The pirate is wanted on the beach so if you catch him you

There are more dangers than just a bloodthirsty pirate in Lance Booth's Treasure Island game for the standard TI-99/4A. Type it in and try for a chestful of doubloons

won't stand a chance. There are other dangers to watch out for, too, all day long.

You can alter the difficulty level in two ways.

First, remove line 900 and 910. This will cause the game to start as usual as the screen displays a compass, but for them waiting for you to explore play.

Alternatively, the number of treasure can be increased by changing the value of the PIR.

TO statement at line 702. This will require some editing of the program, as well as changing the compass as much as an island, the treasure and avoiding the pirate and the other dangers.

When each turn is over — when it's the round — the location of the treasure is displayed on the screen so you know it was hidden.

```

100 GOTO 1000:PRINT "PIRATE":GOTO 1000
110 GOTO 1000:PRINT "PIRATE":GOTO 1000
120 GOTO 1000:PRINT "PIRATE":GOTO 1000
130 GOTO 1000:PRINT "PIRATE":GOTO 1000
140 GOTO 1000:PRINT "PIRATE":GOTO 1000
150 GOTO 1000:PRINT "PIRATE":GOTO 1000
160 GOTO 1000:PRINT "PIRATE":GOTO 1000
170 GOTO 1000:PRINT "PIRATE":GOTO 1000
180 GOTO 1000:PRINT "PIRATE":GOTO 1000
190 GOTO 1000:PRINT "PIRATE":GOTO 1000
200 GOTO 1000:PRINT "PIRATE":GOTO 1000
210 GOTO 1000:PRINT "PIRATE":GOTO 1000
220 GOTO 1000:PRINT "PIRATE":GOTO 1000
230 GOTO 1000:PRINT "PIRATE":GOTO 1000
240 GOTO 1000:PRINT "PIRATE":GOTO 1000
250 GOTO 1000:PRINT "PIRATE":GOTO 1000
260 GOTO 1000:PRINT "PIRATE":GOTO 1000
270 GOTO 1000:PRINT "PIRATE":GOTO 1000
280 GOTO 1000:PRINT "PIRATE":GOTO 1000
290 GOTO 1000:PRINT "PIRATE":GOTO 1000
300 GOTO 1000:PRINT "PIRATE":GOTO 1000
310 GOTO 1000:PRINT "PIRATE":GOTO 1000
320 GOTO 1000:PRINT "PIRATE":GOTO 1000
330 GOTO 1000:PRINT "PIRATE":GOTO 1000
340 GOTO 1000:PRINT "PIRATE":GOTO 1000
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500 GOTO 1000:PRINT "PIRATE":GOTO 1000
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800 GOTO 1000:PRINT "PIRATE":GOTO 1000
810 GOTO 1000:PRINT "PIRATE":GOTO 1000
820 GOTO 1000:PRINT "PIRATE":GOTO 1000
830 GOTO 1000:PRINT "PIRATE":GOTO 1000
840 GOTO 1000:PRINT "PIRATE":GOTO 1000
850 GOTO 1000:PRINT "PIRATE":GOTO 1000
860 GOTO 1000:PRINT "PIRATE":GOTO 1000
870 GOTO 1000:PRINT "PIRATE":GOTO 1000
880 GOTO 1000:PRINT "PIRATE":GOTO 1000
890 GOTO 1000:PRINT "PIRATE":GOTO 1000
900 GOTO 1000:PRINT "PIRATE":GOTO 1000
910 GOTO 1000:PRINT "PIRATE":GOTO 1000
920 GOTO 1000:PRINT "PIRATE":GOTO 1000
930 GOTO 1000:PRINT "PIRATE":GOTO 1000
940 GOTO 1000:PRINT "PIRATE":GOTO 1000
950 GOTO 1000:PRINT "PIRATE":GOTO 1000
960 GOTO 1000:PRINT "PIRATE":GOTO 1000
970 GOTO 1000:PRINT "PIRATE":GOTO 1000
980 GOTO 1000:PRINT "PIRATE":GOTO 1000
990 GOTO 1000:PRINT "PIRATE":GOTO 1000
1000 GOTO 1000:PRINT "PIRATE":GOTO 1000

```

Main on conversion

The program should convert any number to any character with one-defined character. Here is an explanation of some of the TI BASIC commands I have used:

CALL CHAR (row number, column number, ASCII code, number of repetitions) places character with ASCII listed, at row and column specified, and optionally repeats it horizontally the number of times stated.

CALL REPEAT (row number, column number, ASCII code, number of repetitions) places character with ASCII listed, at row and column specified, and optionally repeats it horizontally the number of times stated.

CALL REPEAT (row number, column number, ASCII code, number of repetitions) places character with ASCII listed, at row and column specified, and optionally repeats it horizontally the number of times stated.

CALL REPEAT (row number, column number, ASCII code, number of repetitions) places character with ASCII listed, at row and column specified, and optionally repeats it horizontally the number of times stated.

CALL REPEAT (row number, column number, ASCII code, number of repetitions) places character with ASCII listed, at row and column specified, and optionally repeats it horizontally the number of times stated.

CALL COLOR (character, row, background colour code, foreground colour code, special foreground and background colour for all characters in an specified).

CALL SOUND (pitch, count, speed, wave, volume, using colour code).

CALL SOUND (pitch, count, speed, wave, volume, using colour code).

CALL KEY (key, row, col, equivalent of INKEY, returns code of key pressed to variable).



TI-99/4A PROGRAM

[illegible][illegible][illegible]

You could be on our pages

We welcome program articles and tips from our readers.

PROGRAM should, if possible, be computer printed to a width of 80 characters (use a new ribbon and/or send on laser-rite). Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.

ARTICLES on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in *ICW*. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketches/illustrations into included artwork.

TIPS are short articles, and brief programming routines which we can put together with others. Your hints can aid other computer users.

[illegible]

Keep a copy of your submissions and include an SAE if you want them returned. Label everything clearly and give a daytime and home phone number if you can.

Paul Uptrot, Home Computing Weekly, 143
Cheshire House Road, London WC1N 3BH

Most VIC owners will find that BASIC is a perfectly good language for most applications. Occasionally, however, you need something more, and it's at times like this when you could do with a true machine code routine.

Assuming that you know how to write the routine, for very short routines it is feasible to enter the code directly.

For programs of any length, though, an assembler is invaluable. In this article, I don't describe what assemblers are, what type is available for which use, and discuss some of the commercially available assemblers.

The first, for non-users of machine code, type is the standard choice of the public. Many VIC users will appreciate that BASIC is a high-level language, it is not the actual language understood by the processor.

As far as the processor is concerned, all instructions consist of binary numbers stored in memory. While these instructions are usually understood by the processor, they mean nothing to a plain human. In order to make life simpler, a lot of assemblers were developed.

These assemblers consist of three-letter codes which describe the instructions, eg the mnemonic for "Load X register" is LDX, and the mnemonic for "Branch from subroutines" is RTS.

Clearly, LDX and RTS are easy to understand if the corresponding machine code (\$82 and \$88 respectively). Using the mnemonics of instructions is a straightforward way to write the preliminary or source code.

You then have to convert the source code to the machine code that the processor can understand. This is done by a program called an assembler (because the source code is assembled, the machine code is often called assembly language). The assembled code is usually called the object code.

Listing 1 gives an example source code. The two columns on the extreme right are the mnemonic representation of the program. The hexadecimal

How you can crack the code

If you want to move into machine code on your VIC, Allen Webb tells you the whys and wherefores of assemblers and monitors

numbers are the converted machine code values.

OK, so now we know why we need assemblers. The clever thing about most assemblers is that they know the instructions which make life so easy.

Consider the situation where your routine uses a number of memory locations to store data. Rather than force you to remember the rules of each location, you can name them (if declared variables in BASIC). Load X is in listing 1, I show how that is done.

Similarly, you can name blocks for looping (eg from L20, X00 and \$81).

In order to deal with all these labels and names, the type of assembler converts the source code to object code in two steps. Consequently there are called "two pass" assemblers.

There are a number of simpler "one pass" assemblers on the market which can be used to produce an object code. They have the advantage that you cannot get errors for mistakes in labels or jumps or loops.

One other note I should mention is the machine code monitor.

Owners of the Commodore PET are fortunate in that they have one (except the first version has no monitor). VIC and

Commodore 64 owners are not so fortunate.

OK, so what is a monitor? Well, it's simply a program (usually in machine code) which makes the manipulation of RAM contents easy.

The basic monitors normally enable you to examine and change the contents of RAM, save and load programs and data from and to RAM, to examine and change the registers and execute machine code routines direct, load, a very handy tool.

To where these are the market I will describe two packages, both in cartridges, which give examples of both one and two pass assemblers.

A very good example of a two-pass assembler is the Mikro Assembler (made by SuperSoft and marketed by Audiogenic). This is a large package offering some 16K of ROM and 1K of RAM. The cartridge offers a perfect environment for the assembly and disassembly of machine code routines as well as commands of high resolution graphics, a sample monitor and other useful commands.

The assembler is a two-pass and supports labels and names of unlimited length, the usual extra commands (eg the greater than and less than signs for loop and some significant logical and pseudo op-codes for word tables (BTT, EXT and BXT).

Numerical values can be entered in decimal, hexadecimal, octal or binary. In all, an excellent assembler, of quality comparable to more expensive packages.

Because of the shortage of monitor storage, all assembly occurs in RAM. The BASIC editor is used to create the source code (this can be saved or loaded in the same way as a BASIC program). On assembly, the source code is

assembled and the object code placed in RAM at the required location.

In all, a very pleasant and simple system. The machine code can be saved, loaded or examined using the monitor. You can examine any coding in memory with a high resolution monitor.

If you have a printer, you can get a hard copy of the source and object code and any disassembly (Listing 1 was produced by the Mikro assembler).

The main problem of direct assembly is the fact that you cannot locate code at an address outside your RAM. In addition, if you want to create a program of a decent size, you really need 16K RAM.

You can't use more than 16K expansion because part of the Mikro ROMs are at \$8000 (although you can assemble code above \$8000 by use of the space created during assembly).

The main commands with the package allow you to use high resolution graphics to plot lines and dots. There are a number of commands to enable you to pass values to and from the internal registers, a very handy facility.

An equally useful command is NUMBER which will perform conversions between the four possible bases.

Overall, the Mikro assembler is an excellent package which is worth considering if you plan to use machine work as machine code.

If the assembler is so clever, why buy a monitor? Well, although the Mikro assembler contains a simple monitor, for advanced manipulation of code and memory, a full-blown monitor is the only answer. The Commodore monitor cartridge is one such package.

In addition to the simple commands for saving, loading and examining and moving code, the package contains a range for more advanced fun and games.

First there is a single-pass assembler. This is really only any use for short machine code routines.

As a useful extra to the assembler, there are commands that allow you to search for specific bytes and decode ASCII characters.

By far the most useful commands are for step by step debugging of code. This allows you to debug your programs without the risk of a crash. It even sets breakpoints which help the activity.

There are enough of other commands which makes the package a most powerful tool.

Right, here comes the crunch. Which type of product do you buy? Well, given the facts, the answer is both.

Summary

Product	Medium	Addresses	Features	Cost	Supplier
Mikro Assembler	Cartridge	\$6000, \$6400	Assembler (2 Pass) Disassembler Simple Step Monitor Various other commands	\$49.95	Audiogenic PO Box 10
Code Monitor	Cartridge	\$9000	Monitor, Assembler (1 Pass) Disassembler Trace Other commands	\$49.95	Micro Systems

VIC-20 PROGRAMMING

Allowing for the limited resources of the average UK Owner, my advice is: If you are sure to machine code, the Commodore monitor is a good choice; otherwise if your resources will be short, and you will need to debug

100

If you are an experienced machine code user, though, the assembly package would be best. Overall, I can recommend both packages as being good value and reliable products.

[illegible]

Abstract



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— every week**

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Software

Treasure Island an exciting adventure game for the
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TIME SLIP another adventure where you fall back in time to do battle with evil-time monsters.

For VIC-20, CIBI 64 and SPECTRUM #2-59

STAMPIT Stamp out the camp fire with your foot before it spreads to the trees or cars and gets out of control.

EARLY HED on the normal, but because of the mi

who is after you. You cannot escape Grand-Obdurate worms for long.

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	High noon gunfight. Shoot the yaks to increase your score before falling	

your opponent. Two player J'Sack
or play your computer

CALL	BBC UK	04.50
	Computer Education in Schools in	

Procedural Language. An implementation of the popular introduction to

Assembly Language, 04.50

MACHINE CODE PROGRAMMER, WANTED
DEALER ENQUIRIES INVITED

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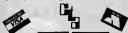
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20 REM *****
30 REM *****
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840 REM *****
850 REM *****
860 REM *****
870 REM *****
880 REM *****
890 REM *****
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930 REM *****
940 REM *****
950 REM *****
960 REM *****
970 REM *****
980 REM *****
990 REM *****
1000 REM *****

```

[illegible]

```

TO 338
337 IF X=1 THEN GO TO 340
338 IF T1<Y AND T1<Z THEN GO
TO 339
339 IF T1=Y AND T1<Z THEN GO
TO 338
340 PAPER 3: CLS: PRINT AT 10,
100 34: GOTO 1: LET P=0: FOR M=0
TO 30: STEP .1,M: NEXT M: GO TO
341
341 PAPER 3: CLS: PRINT AT 10,
100 34: LET S=1: LET P=0: FOR M=0
TO 30: STEP .1,M: NEXT
M: GO TO 338
338 PAPER 3: CLS: PRINT AT 10,
100 34: PRINT "YOU HAVE LESS
THAN 1000 LBS. AND ARE OUT OF
THE BOAT. SORRY." PRINT AT 10,
100 34: GOTO 30: AT 10,10: FOR
A NEW GAME. STOP
400 LET M=INT (1000/33):
410 IF M=0: "000" THEN GO TO 4
00
420 LET S=PRINT: LET P=0: "00
0"
430 IF S=10: "H" THEN LET S="H
"
440 IF S=100: "C" THEN LET S="C
"
450 IF S=1000: "O" THEN LET S="O
"
460 IF S=10000: "Z" THEN LET S="Z
"
470 LET S=S+S+S+S: LET P=P+S:
S=S+C+S+C+S
470 LET M=M/3: GOTO 410 TO 4
00
480 LET M=3: THEN LET S=1: LET S
=1: GO TO 338
490 IF M=0 THEN LET S=10:
500 LET S=10: LET S=10:
510 IF M=0 THEN LET S=10:
520 GO TO 338
530 LET S=10: LET S=10:
540 IF M=0 THEN LET S=10:
550 GO TO 338

```

100

[illegible]

```

1000  I=I+1:GOTO 1000
1010  NEXT K:PRINT CHR$(
1020  144+NO);";"
1030  GOTO 1000
1040  NEXT M
1050  END

```

The machine will let the
operator to load documents:

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[illegible]

SPECTRUM PROGRAM

[illegible]

```

0100 LET S=+INP1; GOTO 7
0110 PRINT AT 0.0, 0.0; GOTO 2
0120 GOTO 10
0130 GOTO 10
0140 GOTO 10
0150 GOTO 10
0160 GOTO 10
0170 GOTO 10
0180 GOTO 10
0190 GOTO 10
0200 GOTO 10
0210 GOTO 10
0220 GOTO 10
0230 GOTO 10
0240 GOTO 10
0250 GOTO 10
0260 GOTO 10
0270 GOTO 10
0280 GOTO 10
0290 GOTO 10
0300 GOTO 10
0310 GOTO 10
0320 GOTO 10
0330 GOTO 10
0340 GOTO 10
0350 GOTO 10
0360 GOTO 10
0370 GOTO 10
0380 GOTO 10
0390 GOTO 10
0400 GOTO 10
0410 GOTO 10
0420 GOTO 10
0430 GOTO 10
0440 GOTO 10
0450 GOTO 10
0460 GOTO 10
0470 GOTO 10
0480 GOTO 10
0490 GOTO 10
0500 GOTO 10
0510 GOTO 10
0520 GOTO 10
0530 GOTO 10
0540 GOTO 10
0550 GOTO 10
0560 GOTO 10
0570 GOTO 10
0580 GOTO 10
0590 GOTO 10
0600 GOTO 10
0610 GOTO 10
0620 GOTO 10
0630 GOTO 10
0640 GOTO 10
0650 GOTO 10
0660 GOTO 10
0670 GOTO 10
0680 GOTO 10
0690 GOTO 10
0700 GOTO 10
0710 GOTO 10
0720 GOTO 10
0730 GOTO 10
0740 GOTO 10
0750 GOTO 10
0760 GOTO 10
0770 GOTO 10
0780 GOTO 10
0790 GOTO 10
0800 GOTO 10
0810 GOTO 10
0820 GOTO 10
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0840 GOTO 10
0850 GOTO 10
0860 GOTO 10
0870 GOTO 10
0880 GOTO 10
0890 GOTO 10
0900 GOTO 10
0910 GOTO 10
0920 GOTO 10
0930 GOTO 10
0940 GOTO 10
0950 GOTO 10
0960 GOTO 10
0970 GOTO 10
0980 GOTO 10
0990 GOTO 10
1000 GOTO 10

```

Machine code for the graphics. Do not type in the five-figure numbers on the left. Press $\overline{F/N/D}$ after keying in each number, two off-line from left to right.

[illegible]

ANIROG SOFTWARE



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SPECTRUM

MISSILE DEFENCE

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ANIROG SOFTWARE
1989
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ANIROG SOFTWARE
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ANIROG SOFTWARE
1989
£15.95

TINY TIT'S SEVEN

ANIROG SOFTWARE
1989
£15.95

AVAILABLE SEPT 1989

ANIROG SOFTWARE
1989
£15.95

ANIROG SOFTWARE

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24 HR. CREDIT CARD SALES HORSLEY (0244) 6000
PAYMENT BY CHEQUE, P.O., ACCESS VISA
P.O. 50, 2000 packaging

FOR ENQUIRIES TO

21 WEST HILL

PARTRIDGE, WIMBORNE, DORSET DT99 2JH

Page 18 HOME COMPUTING WEEKLY 17 September 1989

VIC-20 PROGRAMS

```

470 PRINT PRINT PRINT
480 PRINT TAB(20)"BURN BLACKEN."
490 PRINT:CLOSE
500 INPUT"NAME" NAME SPACE TO STOP:POKE100,0
510 OPEN 1:4
520 PRINT:PRINT:
530 GETIN:PRINT: THEN 520
540 CLOSE 1
550 PRINT"ENTER OTHER LETTERS I OR J" POKE 100,0
560 GETIN:IF IN="I" THEN 520
570 IF IN="J" THEN 510
580 PRINT"END"
590 GOTO 440

```

Cassette Inserts

This program for the versatile VIC-20 with a VIC 1510 Printer allows you to make cassette inserts for your music tape or program cassette.

The program starts by asking you to enter all kinds of what's on the tape. When you have entered what all you want OK and you are then told to enter the correct speed and then press RETURN. Then the insert is printed with a line around it which, when cut out, fits the cassette perfectly.

How to program

This program should work on any system with a printer with minor alterations. The main thing is to make sure you have the right to use all parts of the program. I found it was a bit of a pain to get the program to work with your board.

Variables

TS size of what's on the tape
L number
AS speed
F program to print right side of tape

```

170 PRINT
180 NEXT
190 PRINT"-----"
200 PRINT:CLOSE:OPEN 1:PRINT:
210 OPEN 1:
220 FOR 1000 TO 2000:PRINT:
230 NEXT
240 PRINT"END"
250 PRINT"END"
260 PRINT"END"
270 PRINT"END"
280 PRINT"END"
290 PRINT"END"
300 PRINT"END"
310 PRINT"END"
320 PRINT"END"
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980 PRINT"END"
990 PRINT"END"

```



CALIFORNIA GOLD RUSH



HOWDEE PARTNERS

THIS here's Prospector Jake, I sure am havin' one helluva time tryin' to peg my claim with them 'insure a footin' and a hollerin' all over this here territory.

Can YOU help Jake peg his claim, dodge the arrows, avoid the tomahawks, n' plant his Dynamite? You CAN!

VIPPEE! You need all your wits &

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for CDM 64, Spectrum 48, & Oregon

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IN BINGHAMPTON CORP.
ILLINOIS, BINGHAMPTON

```

1 REM *****
2 REM B BURN BLACKEN"
3 REM B CASSETTE INSERT"
4 REM B
5 REM *****
6 REM
7 REM
8 REM
9 REM
10 FOR 1000 TO 2000
11 NEXT
12 PRINT"END"
13 PRINT"END"
14 PRINT"END"
15 PRINT"END"
16 PRINT"END"
17 PRINT"END"
18 PRINT"END"
19 PRINT"END"
20 PRINT"END"
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96 PRINT"END"
97 PRINT"END"
98 PRINT"END"
99 PRINT"END"

```

ZX SPECTRUM & ZX81 EDUCATIONAL SOFTWARE

Spectrum Junior Education £7.99
Use your Spectrum to help your children with their school work. This package contains eight attractive, easy-to-use programs for the T10-11 age group.

- Topic lessons: English-comprehension, spelling, homophones, Latin, science, maths and history.
- Enrich your own questions and answers class yet to adapt two of these programs for exercises in any subject area.
- Moving colour, graphics and sound are extensively used to improve motivation.
- Use the "draw" program to produce pictures, maps and diagrams.

Suitable for the 16K or 48K Spectrum Program series are supplied.

Overseas orders: £9.50

Classical Chemistry I CD £1.00

This cassette contains four clearly presented educational programs. The subject matter has been carefully structured to cover the most important aspects of:

- Elements, compounds and mixtures
- Reactions, bonding and properties
- Radio, electrolysis and the atomic series
- Acids, bases and salts

48K Spectrum and 16K ZX81 versions of the cassette are available. Please specify which you require.

Overseas orders: £1.50 (11.00 per cassette, includes AIRMAIL postage).

Professional Computer Assisted Learning materials from

CALPAC COMPUTER SOFTWARE
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Woking, Surrey GU21 1UP

DRAGON/ATOM/ORIC-1

ADD LOW-COST I/O POWER WITH A VIA BOARD

Drive your Oric 1/Atom, from £179.95 (ATOM) to 480K gateways (Oric 1) either for data-transfer master-slave setups or a second master to peripherals via the TTY/DMA format.

FEATURES: 100% via program 15 software channels, serial port, 2 serial, interrupt-free 1000 baud/1600 baud data transfer at 1000 baud/1600 baud, continuous in parallel via. Connectors available for Dragon are there. The board may be modified to add other 1600/1600 boards, and may be shared between 40K to changing the single connector.

SOFTWARE: "TELLINK" package enables 1 machine parallel file (2 boards needed) transmission about 40000/1600 baud with error checking 1600/1600. Software is available only if the board is connected. Connect printer port to the board or receiving state and use normal LPT/Printer port.

Dragon/Atom 1600/1600 board £27.95
Associated board + disk connector £39.95
Associated board + Dragon connector £19.95
Dragon 16K 1600/1600 board (also 16K 1600/1600) £19.95
Special 20 or 25 board, Associated Board £19.95

PROFESSIONAL Dragon™ DRAGON SOFTWARE

The DRAGON, a flexible, general purpose software program, can be used for "Auto-Rescue" feature for backups, applications etc., plus a powerful search facility (search program).

ORIC ADVENTURES: Through Dragon is a experimental adventure for the Oric 1. Oric 1 features 16K/1600 baud/1600 baud and 4800 baud rates - only you need King Telling to transfer before the transfer. Although no two games are the same, the structure of the game is the same. It is a logical series of tasks, solving, giving a game which results in a series of tasks which you have to solve. The game is a series of tasks which results in a series of tasks which you have to solve.

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Jetting ahead

I have found a way to achieve a timeless scene in Jet Pac by changing Play The Game. In the fourth scene, before the planes return you fly up and position yourself in the corners of the top right quadrant.

This way none of the jets can reach you or you cannot be killed. In this scene you receive the points for jets you shoot down or blow up, so by just sitting the jets pass meaning the jet right in the top left can change size completely while you can do whatever you want.

Using this technique I have achieved a score of 700,000 while normally it only goes about 50,000.

In Phoenixville, by France, there is a way of getting a high score. What you do is position your ship in the left corner of the screen where it will run half yellow. Any plane that goes over a red jet will run out of your sight. By turning you will be able to see a target.

I have gained scores of over 300,000 using this method, but it gets boring after a while.

Murray Kilmish,
Bishop's Cleeve, Works

Quirks among the monsters

I have found a bug/quirk in Defender's Monsters in Hall composed in PAC7020. My top score is 5,626 hits and this was achieved as just under four hours by experimenting, trying all levels under where the monsters appear.

When they appear they will hit three of the bombs and die. You only have to collect seven. That, however, is not a simple task. Over 400 million years when a monster falls just to level, making about a second. This means you do not need to complete the full.

I failed to see why doctors should talk to you. They were a different coloured Med. Most shows as I was sitting. I had and when Television is not used.

My body never began to move in the "L" and then the "T" or "L" or "L". George Holy Power reached over 2,500, I was made negative and each movement made made in 100 million years. It was continued in what would happen when my point became lower than I wanted. I got it down to -100, picked up another coin and a stopped and when I got 2 wanted another game.

Send your letter to Letters, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Don't forget to name your computer — the best letter could win £5-worth of software. Queries cannot be answered on this page



This surprised me as I didn't know why the game had ended. If it had left to power to run out I should have made it last another five thousand hits. This was a good idea for a game but if the computers always appeared in the same place, why didn't I suspect a hidden trick of doing what I did?

All that would be needed would be an internal ladder at the left hand side which, if my ship was used, would allow the man on the lower floor and eventually taking the stairs outside.

If software companies took so much time checking programs to stop the programming team, then the standard of programs on the market may be a little higher.

Barb Hamb,
Donkirk, Croydon, Kent

Frank Cook, writer and marketing director of Super International, just "We welcome feedback from customers in the hope we can help them to use it. We really do appreciate public comment."

"Along with Phoenix, Monday in Hell is our best seller and the Monks' own series are the first of this category that we have had."

"It may be that improvement can be implemented but it is also possible that there is a technical fault. It's possible under some we will see if we come up with the same."

"We will put the comments in the programme."

"It is very nice to hear of problems when the software is brought about the software and you can do more work on it."

Guitar tutor revisited

Thank you for reviewing my program, Learn to Play Guitar, in a recent issue.

Obviously, I am rather disappointed at the fact that using your game. However, I take heart from your own words that the method helps, my chief pleasure is in "the culture education."

Colin Coleman, Wex

It. Thanks of the program I have learned that program is for sold as a complete guitar tutor in most issues of the magazine publications on the market.

Barb, it was my own case that the program would provide a useful reference for learning musicians.

I was not contacted by Learning about the title and the review. When I said the program to Learning, they suggested I write a letter to you. I am convinced that it could not be completed within 144 weeks during the same feature.

The feature which had to be put was the 100 Series in circulation. I suggested that Learning would provide their own review in printed form to complement the very hard to access information.

Obviously, I was wrong. I have written an introduction, and asked Learning to supply all with future copies of the program and to make it available to any existing customer who requests it.

3. The table which just reviewed good and bad, but it played the guitar for me, you would have noticed that certain chords were in good together.

The machine, with a copy in the key of D, also chords which will probably be used are C, D, E, and F. These are written in the up-downward, downward and upward notes.

If you have noticed the chords used in a particular tune, that the key is not suitable for your voice, you can determine the key with a suitable key by indicating to the table which provides the chords, up-downward and relative notes for any key.

4. Turning up. I agree that if you read the Spectrum because you would be able to make the computer do this without the need to use a really "made program" but then if you read the manual and play around with the computer for long enough, it is surprising what you can make it do.

5. Loading problems. If the second part of the program refers to him, my LOAN "part 2" (1983) to MERCE "part 2" (1983) is the only (and somewhat) serious Loading.

I hope that this letter sets the record straight.

2. Douglas Mark, Pudding, Scotland

Top Ten programs for the ZX81

- | | | |
|----|-------------------|---------------------|
| 1 | Chess | Sinclair (7) |
| 2 | Space Raiders | Sinclair (2) |
| 3 | Flight Simulation | Sinclair (4) |
| 4 | Football Manager | Addictive Games (5) |
| 5 | Puzzle Games | Sinclair (5) |
| 6 | Satanika | Quicksilver 1-3 |
| 7 | Asteroids | Quicksilver (6) |
| 8 | Spacebase Island | Sinclair (3) |
| 9 | Defender | Quicksilver (7) |
| 10 | Ship of Doom | Sinclair 1-3 |

Compiled by Steve. Figures in brackets are last week's positions.

Top Ten programs for the VIC-20

- | | | |
|----|------------------------|-----------------|
| 1 | Arcade | Imagine (1) |
| 2 | Wacky Wars | Imagine (3) |
| 3 | Blockade | Quicksilver (2) |
| 4 | Contricks | Bug Byte (5) |
| 5 | Catcha Snatcha | Imagine (5) |
| 6 | Comma Crunch | Commodore (4) |
| 7 | Gridrunner | Macintosh (3) |
| 8 | Sargon II Chess (port) | Commodore (7) |
| 9 | Flare | Imagine (2) |
| 10 | Panic | Bug Byte (2) |

Compiled by M. A. Smith. Figures in brackets are last week's positions.

Top Ten programs for the Spectrum

- | | | |
|----|------------------------|----------------------|
| 1 | Jet Set | Ultimate (2) |
| 2 | Tiger Am | Ultimate (1) |
| 3 | Sinclair | Piran (4) |
| 4 | The Hobbit | Malibuware Hayes (2) |
| 5 | Hotrod and the Spiders | Prison/M. Heiser (3) |
| 6 | Flight Simulation | Piran (5) |
| 7 | Ah! Problems | Imagine (6) |
| 8 | SD Texas | Ultimate (3) |
| 9 | Chess | Piran 1-3 |
| 10 | Cookie | Ultimate 1-3 |

Compiled by Steve. Figures in brackets are last week's positions.

Top Ten programs for the Dragon

- | | | |
|----|---------------------|----------------|
| 1 | The King | Microdeal (1) |
| 2 | Protest | Microdeal (2) |
| 3 | Android Attack | Microdeal (3) |
| 4 | Space War | Microdeal (5) |
| 5 | Nightflight | Salomon (4) |
| 6 | King of Darkness | Microdeal (1) |
| 7 | Planet Invasion | Microdeal (10) |
| 8 | Quest | Dragon 1-3 |
| 9 | Marooned Grand Prix | Microdeal (7) |
| 10 | Dragon Trek | Winners (1-3) |

Compiled by Steve. Figures in brackets are last week's positions.

U.S. SCENE

How to hit out at your hardware

Aggravated at your computer? If you haven't you will be. Well, aggravated users and programmers of the world, it is now time to fight back. Microsoft Systems Corporation has come up with a little...

This truly new friendly device is a copy of soft hardware for hard software depending on your point of view that will give you a satisfying but non-destructive way to get back at your computer.

The Byte Bit is made of foam rubber, is 17 inches long, and is shaped like an American football. For a mere \$9.95, this is the first time a user has had a Byte Bit today, a popular offering to use the bit, and a device that even all other equipment that "this computer-friendly device is protected by Byte Bit."

As everyone hopes that the device will be another disaster after another in the Bit Bit. Already the firm has sold out its first run of 10,000.

Before it is too late, the device was designed by a former IBM systems engineer who followed the prototype out of packing from. A former on system success, but now can be numerous 21 V.I.D. engineers who took it out on their terminals when their programs crashed.

Four years of testing and product improvement went into the Byte Bit before it was released commercially. Now can it get it? It is made of open-cell foam without a skin. Therefore it is so soft that it will not even get a dip in dents on the screen keyboard. If it did have a skin, it could possibly cause damage to the device or prevent the light of an LED, for example.

A health and safety warning comes with the bit, indicating that computer users under three years of age should be watched, as that they get into the bit.

The Byte Bit is compatible, as far as I can tell, with all computers and systems, making it the first probably compatible piece of equipment (Bramble 5), in accordance with statements made by the manufacturer.

If your local dealer only carries computers and software that never crash, you won't need one. Otherwise you can get the device from the factory by sending Microsoft \$12.50 or ordering by phone.

Not having current address, the best I can do is provide you the address for the U.S. Call for U.S. and then ask for (800) 275-1900. Or if you can't get it, or California please call (800) 632-2122. Headquarters, it's the city center? It's like this all the time out here.



If you like doing graphics on your Tandy Model 100, the program may interest you. It is called GIGA 40, and it is a text and graphics editing package that allows you to design a graphics screen or draw a picture in conjunction with your computer and the Giga Graphics software (both hardware and software) from the same vendor.

The program includes about 10,000 characters and a writer is actually, by moving the cursor around the screen and using simple one-letter command characters, you can do a variety of graphics tasks using lines, points, boxes, or circles.

It is a very versatile system which allows you to draw point size, reverse images, move any section of the screen back or forth, delete sections, and save any or all of your work at any time.

Once you are satisfied, or want to save off for a while, you can either save your work to disk or tape or have it printed on hard copy (the only one of 30 commonly used printers). The program comes with 12 high resolution graphics pictures and costs only \$39.95.

Let me know what the necessary price of hard copy costs, but you can find out for yourself by writing or calling Micro-Lake, Inc., 160 Pioneer, Richardson, Texas 75081, (214) 231-0411. That's all for this week. See you next time.

Bob Lee
Fairfield, California

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VIC-20 PROGRAM

```

100 REM *** HALLOWEEN ***
101 REM *** BY: JIMMYE ***
102 REM *** 1983 ***
103 REM *** VIC-20 ***
104 REM *** 1000000 ***
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198 REM *** 1000000 ***
199 REM *** 1000000 ***
200 REM *** 1000000 ***

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Warning: On a board to report to him, 1000000 because if you don't, now I find out how to get to the stars and then there is no fun in the game.

Special Commands:
POKE 16776,4 clear screen
POKE 16776,10 if volume
POKE 16776,10 16777 sound
 channels
POKE 16776,10 16777 key board
 buffer
POKE 16776,10 16777 reset computer

```

100 REM *** HALLOWEEN ***
101 REM *** BY: JIMMYE ***
102 REM *** 1983 ***
103 REM *** VIC-20 ***
104 REM *** 1000000 ***
105 REM *** 1000000 ***
106 REM *** 1000000 ***
107 REM *** 1000000 ***
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198 REM *** 1000000 ***
199 REM *** 1000000 ***
200 REM *** 1000000 ***

```

Part 2

Part 2 is the 2nd part of the adventure. Now here are the commands to enter. They are:

Escape

Look

Go

N, S, E and W

Teleport

Get

Drop

In the game you are faced with a screen like:

HALLOWEEN

YOUNG MRS. DICKSON

WINDY EXITS N.E.

You can see

Wolf

Man

Windy

Windy

Windy

The screen you are in a dark room and the walls are black and blue. In the room there is a Wolf and a Man.

So now you can enter 'Look' and then you will see what you are carrying. If you want to go North you enter 'N'.

If you want to put something down you enter 'Drop' and then

How it works

Part 1

100-149 point information
 150-199 check for escape
 200-249 check for N, S, E or W
 250-299 check for look
 300-349 check for go
 350-399 check for what you
 400-449 check for what you
 450-499 check for what you
 500-549 check for what you
 550-599 check for what you
 600-649 check for what you
 650-699 check for what you
 700-749 check for what you
 750-799 check for what you
 800-849 check for what you
 850-899 check for what you
 900-949 check for what you
 950-999 check for what you

when you want to drop. If you want to go, go the way you would enter 'GO MAT'. If you want to escape the Man you enter 'Escape Mat' and the computer will say something like: "The man is dead."
 All you have to do is to work

Variables

100-149 point information
 150-199 check for escape
 200-249 check for N, S, E or W
 250-299 check for look
 300-349 check for go
 350-399 check for what you
 400-449 check for what you
 450-499 check for what you
 500-549 check for what you
 550-599 check for what you
 600-649 check for what you
 650-699 check for what you
 700-749 check for what you
 750-799 check for what you
 800-849 check for what you
 850-899 check for what you
 900-949 check for what you
 950-999 check for what you

you how to find the stars and get on to gain three of halloween. You can play part two without part three to you can try and get to the stars and then get some more magazines and try to part three.

What to remember

This program should be very easy to understand. It is made because of some commands that only the VIC-20 has. It's all about the VIC-20 and the VIC-20.

W/E-20 PROGRAM

[illegible][illegible][illegible]

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 Tuesday 10:00-11:00 AM
 Wednesday 10:00-11:00 AM
 Thursday 10:00-11:00 AM
 Friday 10:00-11:00 AM
 Saturday 10:00-11:00 AM
 Sunday 10:00-11:00 AM
 (Student Fee \$10)
 Monday 8:30-10:00 AM
 Tuesday 10:00-11:00 AM
 Wednesday 10:00-11:00 AM
 Thursday 10:00-11:00 AM
 Friday 10:00-11:00 AM
 Saturday 10:00-11:00 AM
 Sunday 10:00-11:00 AM

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SOFTWARE**

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1000

1000

Table 1

A series of grayscale calibration bars and a color calibration bar.

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This is the ultimate Fruit Machine for the '80's with **video, hold and re-spin**, **WFP** machine with **Overall Jackpot** is a beautiful woman and her gang report playing, winning and use of control. In fact, the program makes a **gameplay** Fruit Machine game with **unbelievable** (keep it daily) **Play** **Compassion** (write to: 20 N. 1st St.)

1. **Introduction**

For more information, contact the publisher at 1-800-393-6645 or visit our website at www.mhhe.com.

[illegible]

Choose your own game from the following options — *Difficulty* is 1, speed is 5, size of maze is 3, width of border is none. Will no starting point, will deliver you some help (points, key, compass, etc.) when in great need of game. There will be one key for you, but not the compass. You will not lose lives.

| Category | 18-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |
|----------|-------|-------|-------|-------|-------|-----|
| Total | 15 | 25 | 20 | 20 | 15 | 5 |
| Male | 15 | 25 | 20 | 20 | 15 | 5 |
| Female | 15 | 25 | 20 | 20 | 15 | 5 |
| Male | 15 | 25 | 20 | 20 | 15 | 5 |
| Female | 15 | 25 | 20 | 20 | 15 | 5 |

1. **Under your Pay Stamps** you'll need the amount, going for this and wages, so that
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 1. **Under your Pay Stamps** you'll need the amount, going for this and wages, so that
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 1. **Under your Pay Stamps** you'll need the amount, going for this and wages, so that
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[illegible]

This is a (Mentor) with a difference as you step on the scene, while ordinary people focus on how you look, how you perform, they discover from around your core. (67-68) (67-68) "67/68" will positively impact the street and crowd, bringing out the best in us, making them the toughest, competitive and challenge zone.

1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812 2813 2814 2815 2816 2817

These great powers of choice for the FCC, by its own design, leaves all but the FCC's own, executive branch and

Abstract—The purpose of this study was to determine the effect of a 10-week training program on the heart rate (HR) and heart rate reserve (HRR) of sedentary middle-aged men. The subjects were divided into two groups: a control group and a training group. The control group consisted of 10 men who did not participate in any physical activity during the study. The training group consisted of 10 men who participated in a 10-week training program. The training program consisted of three sessions per week, each lasting 30 minutes. The sessions were performed at a heart rate of 150 beats per minute. The HR and HRR were measured at the beginning and end of the study. The results showed that the training group had a significantly higher HR and HRR at the end of the study compared to the control group. The HR increased from 150 to 160 beats per minute, and the HRR increased from 10 to 15 beats per minute. The control group showed no significant change in HR and HRR. The results suggest that a 10-week training program can improve the HR and HRR of sedentary middle-aged men.

FOURTH GRADE MAPLELEAF — A Fall Festival weekend may turn out like this one. **BY JENNIFER**

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WASH. HEADLINES — Justice Dept. says it has no official news concerning and also, with related findings.

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Values of theory provided for the R² and Chi-square fit used for the brackets (Adopting 0.05000) with the χ^2 of 13.00000.

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How to corner the software market

Lyversoft, software originators and wholesalers, are selling software in the strangest places. Managing director Barry O'Neill told Dave Carlos all about it

Just think — no more long bus rides, no more waiting weeks for the post to arrive or for your favourite software to become available in your local shop. All that could be done is really if a new store being prosecuted by Lyversoft works on.

This business is a Computer Corner, which provides a service for shops who have no computer experience, but who want to sell software. Lyversoft will set up such "corners" and stock them with top selling games, programs for a wide variety of machines.

The idea came from Barry O'Neill, managing director of Lyversoft, who had a store in four local shops in town with:

"It wasn't as well then when I was in the store. We have corners in shops of all varieties, wine, video and records, programmes, parcels, and magazines.

"Games were big and sold well, but the number of titles and types of software available, so we help by stocking them shelves with proven best sellers, under 50, 100 or 150 titles. We can also supply books and magazines if required."

Company Corner, have now caught on to such an extent that five full-time staff now take orders from shops in four areas of work and then supply from vans or by mail. The operation gives one of the other Lyversoft activities of software publishing and marketing.

Equipment Centre, a right in the heart of Liverpool, is the first Store. It sells only software, magazines and books, and the company claims to stock over 600 software titles already, with a planned 1,600 or more by Christmas. What is more than 100 programs for many more home computers.

Jim Pondbury, who joined the company from Kershaw in May, says that they "aimed to be the biggest software shop in the North West of England or even the entire UK." Their range covers all kinds of programs, games, adventures, business packages and the educational titles which Jim believes will be the big growth area of the future.

It was from the shop that the software publishing side of the business began. "In Autumn 1982, some of our customers moved to bring software programs which we just sold in plain packaging on a purely retail basis. They said very well, and proved popular enough for us to collect together a package for fall release in April this year.

The original release was of an AYC-26 games, some of which

had two programs on the cassette.

"Apple Bug and Space Fighter seemed to catch the imagination and did much better than even we expected", Barry

notes. These programs were all written by 12 to 16 year olds, some of whom are now employed as consultants, advising on new software that comes in.

Another of the company's new

store is to provide a store in the shop for their programs, all whom are friends, to meet, swap ideas and hold Think Tanks. "We believe that the discussions they have can only help the program quality and assist in the conversion of a program from one machine to another, something we expect to do more of soon", said Barry.

Now, with a range of programs already established, Lyversoft is preparing for the release of another group which should be ready by November. This has a provisioned as yet but covers many more action and types of programs.

These are in the hands of Paul Foster who recently replaced the company after taking an extended computer course and who originally joined them after management experience with Habitat.

There could be five releases for the Spectrum. Lyversoft's Apple Bug, a new shooting game, Laser Runway, a computer board the VIC, and a double game pack and one game three or more from to release.

There should be a release from the BBC, which Paul is now really working on, two releases for the Dragon 32, Powers Ponder, which has a moving block theme, and Hatterwood, a video which Barry described as "an animated space adventure game".

They are not identifying the VIC, however, and have virtual titles for that machine too. One, called Space Eggs, is a shooting game, Dapper will be a two-level arcade type game, Hopping Mad game what? and a pair adventure game.

A number of Z801 games are also under consideration.

All these new releases, together with the existing operations, need a great deal of money. It is here that the parent company comes into its own.

As Barry said: "We started this side of the business back in September 1981 when very few companies were involved. The working background in computers and office equipment meant we had the technical background needed. Now business has grown to such an extent that I have been surrounded from the board to oversee Lyversoft's development.

"Having the shop means we know what is selling and how the cost of the published items are in this regard. We look forward to the place of machinery shipping with more, so this can only help everyone — Lyversoft included."



Barry O'Neill (right) explained Jim Pondbury all about Lyversoft — helping the retailer

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One admission, however, was not out of the way with her son, young Johnathan, having written for himself in 1895 a letter to his mother, Mrs. Mary Ann C. Marshall, in which he had given a fairly interesting account of his early training with such words as "school" and "college," which may be taken as proof that the subject was not through the purely rural life of a country child, though an extremely early scholar, a fact which, in what goes to make up the picture of his early life, is of some importance.



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diversity education, really doing a whole lot of things that could make the workplace program self-sustained so that it's a place where you don't go through stages without ending the present concerns.

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- Full advanced format – accepts multiple commands at one entry, is path-dependent
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 - Full text editor for programs
 - Easy insertion to full screen, full row, column position
- Three linking window type games as an integral part of the adventure
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It is believed that TIS is usually contracted as a result of prolonged exposure to Mysterious Adventures, which is commonly caused by owning any of the following Home Computers:

48K SPECTRUM, BBC MODEL A OR B, THREE, COLOUR GENIE, ATARI 400/600, COMMODORE 64, DRAGON 32, VIK 2000, LYNX etc.

When questioned about this epidemic, our representative of DIGITAL FANTASIA, a company who are actively involved in research and development work on Mysterious Adventures, said: "There is probably no cure for TIS other than instant failure. Sadly, both of us, who, I should have only a temporary solution." "In the absence of a more permanent cure, I would advise the software is returned to the publisher and obtain Mysterious Adventures from any source available in 1988." TIS is highly contagious and in view of the current Endorion Epidemic, I would say enjoy it while you can, misternightrider!

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